

WHAT IS CLAIMED IS:

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- ✓1. A fusion implant apparatus for facilitating fusion of bone structures, which comprises:

an implant member for positioning between opposed bone structures, the implant member having a first ring-like segment and a second ring-like segment which engage one another in an end-to-end manner, each ring-like segment having an outer wall defining an internal cavity for reception of bone growth inducing substances and each ring-like segment including a plurality of apertures extending therethrough in communication with the internal cavity to permit fusion of vertebral bone tissue; and

the first ring-like segment including first and second mechanical interfaces, the first mechanical interface being dimensioned to engage a corresponding mechanical interface disposed on the second ring-like segment, the second mechanical interface being dimensioned to mechanically engage an end cap.

- ✓2. The fusion implant apparatus according to claim 1 wherein the second mechanical interface engages a corresponding mechanical interface of a third ring-like segment and one of the second and third ring-like segments includes an additional mechanical interface which engages the end cap. ?

3. The fusion implant apparatus according to claim 1 wherein the first ring-like member is C-shaped and includes two opposing end portions which define a slit therebetween which allows radial compression of the first ring-like segment to facilitate engagement of the first and second ring-like segments.

4. The fusion implant apparatus according to claim 1 wherein the first mechanical interface of the first ring-like member and the corresponding mechanical interface of the second ring-like member when engaged form a groove about an outer periphery of the implant member.

5. The fusion implant apparatus according to claim 4 wherein the groove acts as a cutting guide during implantation of the fusion apparatus between bone structures.

6. The fusion implant apparatus according to claim 4 wherein the groove acts as a measurement guide during implantation of the fusion apparatus between bone structures.

7. The fusion implant apparatus according to claim 1 wherein the implant member includes a plurality of ring-like segments which mechanically engage one another in end-to-end fashion to form the implant member and wherein at least one of the first and the last ring-like segments mechanically engages the end cap.

8. The fusion implant apparatus according to claim 1 wherein the end cap includes a face having at least one aperture disposed therethrough which communicates with the internal cavity to permit fusion of vertebral bone tissue.

9. The fusion implant apparatus according to claim 8 wherein the face of the end cap includes a plurality of apertures disposed therethrough which are arranged in an array-like manner about the face.

10. The fusion implant apparatus according to claim 1 wherein the end cap includes a face having a plurality of detents which extend outwardly therefrom which serve to anchor the fusion apparatus to the underside of the bone structures.

11. The fusion implant apparatus according to claim 10 wherein the detents are arranged radially about the face of the end cap.

12. The fusion implant apparatus according to claim 10 wherein the detents have a spike-like configuration.

13. The fusion implant apparatus according to claim 10 where the detents are arcuately-shaped and have a triangular cross section.

14. The fusion implant apparatus according to claim 1 wherein the end cap includes at least one mechanical interface which engages the corresponding second mechanical interface of the first ring-like segment.

15. The fusion implant apparatus according to claim 14 wherein the mechanical interface of the end cap includes a plurality of locking pins which engage a corresponding annular recess disposed within the first ring-like segment.

16. The fusion implant apparatus according to claim 14 wherein the mechanical interface of the end cap includes a diametrically tapered inner diameter which is dimensioned for friction-fit engagement within the first ring-like segment.

17. The fusion implant apparatus according to claim 14 wherein the mechanical interface of the end cap is generally C-shaped and includes:

two opposing ends which define a slit therebetween; and
a flange which is dimensioned to engage an annular recess disposed within the first ring-like segment.

18. The fusion implant apparatus according to claim 14 wherein the mechanical interface of the end cap includes two opposing arcuately-shaped retaining sleeves which extend concentrically within an inner periphery of the end cap and are dimensioned to engage an annular recess disposed within the first ring-like segment.

19. The fusion implant apparatus according to claim 18 wherein the arcuately-shaped retaining sleeves include an outer rim which is dimensioned to engage the annular recess disposed within the first ring-like segment.

20. A method for fusing vertebrae, comprising the steps of:

providing an implant member for positioning between opposed bone structures, the implant member having:

a first ring-like segment and a second ring-like segment which engage one another in an end-to-end manner, each ring-like segment having an outer wall defining an internal cavity for reception of bone growth inducing substances and each ring-like segment including a plurality of apertures extending therethrough in communication with the internal cavity to permit fusion of vertebral bone tissue; and

the first ring-like segment including first and second mechanical interfaces, the first mechanical interface being dimensioned to engage a corresponding mechanical interface disposed on the second ring-like segment, the second mechanical interface being dimensioned to mechanically engage an end cap;

accessing the intervertebral space defined between opposing bone structure;

advancing the implant member within the intervertebral space between opposing bone structure; and

permitting bone growth into contacting surfaces of the implant member
to facilitate fusion of the opposing boner structure.

